Molybdenum Extractability in Soils and Uptake by Alfalfa 20 Years After Sewage Sludge Application.
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Abstract:
Molybdenum (Mo) at elevated concentrations in non-acid soils is readily taken up into forage crops, particularly legumes, and can result in copper deficiency in ruminants. Because sewage sludges are commonly much higher in Mo concentration than soils, amendment of soils with sludges could cause health problems in livestock. To determine the long-term potential for sewage sludge amendments to raise forage Mo concentrations, alfalfa from historical experimental sludge application sites at the University of Guelph were analyzed in 2000. At two field sites with near-neutral soils of different texture, more than about 5 kg/ha of cumulative Mo loading 20 years earlier lowered the forage Cu/Mo concentration ratio below the critical 2/1 limit for the health of grazing ruminants, despite evidence that most of the Mo applied in several sludges had been lost from the topsoil at both sites. Over all experimental plots at both sites, the alfalfa Mo concentration was correlated to readily-extractable Mo (by 0.01 M CaCl2) in the soil. Total soil Mo was a good predictor of alfalfa at only one of the two sites. The need for stronger regulation and monitoring of Mo in sewage sludges intended for forage and pasture application is indicated.

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